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A RARE CASE OF PAPILLARY CARCINOMA OF THYROID WITH HYPERTHYROIDISM

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HOW TO CITE THIS ARTICLE:

V. Manmadharao, G. Kirankumar, Y. V. Jayaramudu, K. B. Muralidhar, K. Prakash. "A Rare Case of Papillary Carcinoma of Thyroid with Hyperthyroidism". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 10, February 02; Page: 1694-1698, DOI: 10.14260/jemds/2015/239

ABSTRACT: Thyroid cancer is usually found in a euthyroid patient, but symptoms of hyperthyroidism or hypothyroidism may be associated with a large or metastatic well differentiated carcinoma thyroid. Coexisting carcinoma and hyperthyroidism implying a focus of malignancy in a hyper functioning thyroid gland is more common. Absence of hyperplastic thyroid tissue on histology in the former differentiates the two conditions. While subtotal thyroidectomy is an adequate treatment for incidental small focus of malignancy, hyper functioning thyroid malignancy requires more aggressive treatment. We present a case of papillary carcinoma of thyroid presenting with hyperthyroidism. This case emphasizes the need for thorough evaluation of thyroid to exclude malignancy even in a clinical setting of hyperthyroidism.

KEYWORDS: hyperthyroidism, papillary carcinoma thyroid, cervical lymphadenopathy.

INTRODUCTION: Hyperthyroidism and malignancy were considered mutually exclusive for a long time. But association of these two conditions is being increasingly recognised. Cytological examination of nodules detected either clinically or by ultrasound in a patient with hyperthyroidism is suggested to exclude malignancy.¹ Thyroid carcinomas are clinically euthyroid and appear as cold nodules on scintigraphy. Thyroid carcinoma presenting with hyperthyroidism is rare. We report a case of papillary thyroid carcinoma presenting with hyperthyroidism.

CASE REPORT: A 32 year old female presented with neck swelling since 3 years, difficulty in swallowing for 6 months. She noticed another swelling on right side of neck 2 months back. She did not have symptoms suggestive of hypothyroidism or hyperthyroidism. She did not have dyspnoea or hoarseness of voice. There was no history of irradiation to head and neck. There was history of loss of weight. On examination, the patient had a normal look, a resting pulse rate of 76/minute and BP of 120/70mmHg. A butterfly shaped swelling of size 6cm x 4cm present in front of neck, firm in consistency, moving with deglutition. There was cervical lymphadenopathy on right side. Clinical examination of chest and abdomen was normal.

Serum TSH was less than 0.01microIU/mL (normal 0.5- 5.0microIU/mL). Serum total T4 was more than 30 microgram/dL (normal 5-12microgram/dL), total T3 was 693 ng/dL (normal 80-180ng/dL). CECT neck showing diffuse thyromegaly with heterogeneously enhancing small hypodense area close to posterior aspect of right lobe of thyroid, right cervical lymphadenopathy.

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Fig. 1: Showing CECT neck

FNAC of thyroid showing thyroid follicular epithelial cells with attempted acini formation and arranged in papillary pattern, some cells show nuclear inclusions suggestive of papillary carcinoma of thyroid. FNAC of lymphnode showing highly cellular, clusters of sheets of thyroid follicular epithelial cells are arranged in papillary pattern, nuclear inclusions in some cells with background of lymphocytes, eosinophilic matrix suggestive of papillary carcinomatous deposits in lymphnode.

The patient underwent surgery after control of hyperthyroidism with methimazole and propranolol. At surgery, the gland was found to be hypervascular with both lobes enlarged and nodular. Three small lymph nodes in level 2 and level 3 on right side were found to be enlarged. Total thyroidectomy with excision of the enlarged lymph nodes was done. Microscopy of the specimen showed papillary carcinoma with infiltration into both lobes of the thyroid. There was no evidence of thyrotoxicosis in the thyroid gland.

Fig. 2: Showing thyroid specimen

Fig. 3: Showing histology of thyroid specimen

Following surgery the patient developed features of hypocalcemia, so advised calcium supplementation along with levothyroxine. After 3 months whole body scintigraphy with I^{131} was done, showing significant residual functioning thyroid. So the patient was advised for radio iodine ablation.

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DISCUSSION: The risk of thyroid malignancy in a clinically hyperthyroid patient was considered quite low. But this interesting coexistence of hyperthyroidism and thyroid malignancy is being increasingly recognized. This association can be either in the form of an incidental focus of malignancy in the thyroid gland of otherwise clinically hyperthyroid patient or a carcinoma of thyroid presenting with hyperthyroidism with the former being much more common. Diaconescu described these two clinically and pathologically distinct groups. The first category was represented by one case of follicular thyroid cancer with clinically and biologically confirmed hyperthyroidism. The second group included ten patients with thyrotoxicosis and associated unsuspected occult or nodular carcinoma.² Controversy surrounds the disease course of thyroid cancer with concurrent hyperthyroidism. Belfiore et al³ and Ozaki et al⁴ have reported that thyroid cancer associated with graves disease had an aggressive course.

Incidence of hyperthyroidism in patients with thyroid carcinoma is 2.8%. Gulcelik et al found 12 cases of hyperthyroidism among 422 patients of thyroid carcinoma. Nine patients with papillary carcinoma, 1 patient with follicular carcinoma and 2 patients with follicular variant of papillary carcinoma presented with hyperthyroidism. None of the patients had Graves' disease.⁵ Concurrent carcinoma was more frequent in patients with toxic adenoma (8 %) than in those with Graves' disease (6 %) and toxic nodular goiter (5 %). Papillary carcinoma was more common than follicular carcinoma.⁶

Thyroid scintigraphy is used to determine the functional status of thyroid nodules and 'hot' nodules on scintigraphy are generally considered benign. But, autonomously functioning thyroid nodules (AFTN) on scintigraphy were found to be histologically malignant emphasizing that not all hot nodules are necessarily benign.⁷ A carcinoma associated with hyperthyroidism is rarely diagnosed before surgery.⁸ This is largely due to the fact that the majority of the patients had an occult microcarcinoma defined as a tumor of less than 1cm.

Recently a case of papillary carcinoma in an autonomously functioning nodule was described by José Ulisses M confirming that the presence of hot thyroid nodule does not exclude the concomitance of well differentiated thyroid carcinoma.⁹ But Fine needle biopsy revealed a papillary carcinoma in a hyper functioning nodule on thyroid scintigraphy with I¹²³ in another case described by Rubinfeld and Wheeler.¹⁰ Scintigraphy was not performed in our case.

Bulky metastasis in some cases was considered responsible for hyperthyroidism. A rare case of hyperthyroidism in the presence of a functioning bone metastasis secondary to an occult thyroid cancer is reported.¹¹ In the present case there was only moderate enlargement of thyroid gland and small lymph nodes detected at operation. Thyroid auto-antibodies are considered responsible for hyperthyroidism and cancer progression in cases of Graves' with concurrent carcinoma.¹²

Activating mutation of thyroid hormone receptor (TSH-r) gene has been demonstrated in a hyper functioning differentiated cancer. This mutation through activation of cAMP signal transduction is believed to cause hyperthyroidism.¹³ In an autonomously functioning thyroid follicular carcinoma, a combination of mutations of TSH receptor and Ki-RAS was found to be responsible for hyperfunction of the tumor and the carcinogenic process.¹⁴

CONCLUSION: Hyper functioning thyroid carcinoma should be considered in the differential diagnosis of thyrotoxicosis/ hyperthyroidism. This association of hyperthyroidism and malignancy has considerable therapeutic significance. Functioning thyroid carcinomas require total

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thyroidectomy whereas incidental carcinomas, because of their small size can be adequately treated with subtotal thyroidectomy. This case emphasizes the need for thorough evaluation of thyroid to exclude malignancy even in a clinical setting of hyperthyroidism.

REFERENCES:

1. Kim WB, Han SM, Kim TY, Nam-Goong IS, Gong G, Lee HK Ultra sonographic screening for detection of thyroid cancer in patients with Graves' disease. *Clin Endocrinol (Oxf)*. 2004 Jun; 60 (6): 719-25.
2. Diaconescu MR, Lazar C, Chifan M, Dobrescu G. Hyperthyroidism and coexistent thyroid carcinoma *Chirurgia (Bucur)*. 2004 May-Jun; 99 (3): 143-50.
3. Belfiore A Garofalo MR Giuffrida D et al. Increased aggressiveness of thyroid cancer in patients with graves disease. *J Clin Endocrinol Metab*.1990; 70830-835.
4. Ozaki Olto K Kobayashi K Toshima Klwasaki HYashiro T Thyroid carcinoma in graves disease. *World J Surg*. 1990; 14437-441.
5. Gulcelik MA, Gulcelik NE, Dinc S, Kuru B, Camlibel M, Alagol H. The incidence of hyperthyroidism in patients with thyroid cancer in an area of iodine deficiency *J Surg Oncol*. 2006 Jul 1; 94 (1): 35-9.
6. Terzioglu T, Tezelman S, Onaran Y, Tanakol R. Concurrent hyperthyroidism and thyroid carcinoma *Br J Surg*. 1993 Oct; 80 (10): 1301-2.
7. De Rosa G, Testa A, Maurizi M, Satta MA, Aimoni C, Artuso A, Silvestri E, Rufini V, Troncone L. Thyroid carcinoma mimicking a toxic adenoma: *Eur J Nucl Med*. 1990; 17 (3-4): 179-84.
8. Terzioglu T, Tezelman S, Onaran Y, Tanakol R. Concurrent hyperthyroidism and thyroid carcinoma *Br J Surg*. 1993 Oct; 80 (10): 1301-2.
9. José Ulisses M. Calegaro, Maria Stella Oliveira Dias, Sung HoonBae, Sioeme da Silva Moraes, Enio de Freitas Gomes, Luiz Augusto Casulari. Papillary Carcinoma of the Thyroid in an Autonomously Functioning Nodule. *Arq Bras Endocrinol Metab* 2003; 47/6: 739-743.
10. Rubinfeld S, Wheeler TM. Thyroid cancer presenting as a hot thyroid nodule: report of a case and review of the literature *Thyroidology*. 1988 Apr; (1): 63-8.
11. Carcinoma of the Thyroid Manifested as Hyperthyroidism Caused by Functional Bone Metastasis. Ikejiri K, Furuyama M, Muranaka T, Anai H, Takeo S, Sakai K, Saku M, Yoshida K *ClinNucl Med*. 1997 Apr; 22 (4): 227-30.
12. Pandolfi C, Colecchia M, Gianini A Hyperfunctioning thyroid carcinoma. Description of a case [Article in Italian]. *Minerva Endocrinol* 1997 Sep; 22 (3): 79-82.
13. Gozu H, Avsar M, Bircan R, Sahin S, Ahiskanali R, Gulluoglu B, Deyneli O, Ones T, Narin Y, Akalin S, Cirakoglu B. Does a Leu 512 Argthyrotropin receptor mutation cause an autonomously functioning papillary carcinoma? *Thyroid*. 2004 Nov; 14 (11): 975-80.
14. Niepomnische H, Suarez H, Pitoia F, Pignatta A, Danilowicz K, Manavela M et al. Follicular Carcinoma Presenting as Autonomous Functioning Thyroid Nodule and Containing an Activating Mutation of the TSH Receptor (T620I) and a Mutation of The Ki-RAS (G12C) Genes *Thyroid*. 2006 May; 16 (5): 497-503.

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Date of Submission: 20/01/2015.
Date of Peer Review: 21/01/2015.
Date of Acceptance: 24/01/2015.
Date of Publishing: 02/02/2015.